FOR EPA USE: Log # Received Permit Number Date

File Subject

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
Division of Water Pollution Control
Permit Section
Springfield, Illinois 62706

RECEIVED
MAY - 7 1973 1910-73

ENVIRONMENTAL PROTECTION AGENCY
STATE OF ILLINOIS

APPLICATION FOR PERMIT
FOR
TREATMENT WORKS OR WASTEWATER SOURCES
(Deep Well Disposal)

(Read Instruction Booklet Before Completing)

EPA Region 5 Records Ctr.
298920

PART II - APPLICATION FOR OPERATING PERMIT

SECTION I - General Information

1. Name of Facility: Cabot Corporation - Tuscola Plant

2. Owner's Name and Address: Cabot Corporation (Name)
125 High Street, (Street) Boston, Mass. (City, State) 02110 (Zip Code)

3. Plant Mailing Address: P.O. Box 188, (Street) Tuscola, Ill. (City, State) 61953 (Zip Code)

4. County: Douglas

5. Engineer: C. B. Beck (Name) 62-30430 (Illinois Registration Number)

Firm: Cabot Corporation

Address: P.O. Box 1101, (Street) Pampa, Texas (City, State) 79065 (Zip Code)

Telephone: (806) 669-2596 (Area Code, Number)

6. Construction permit issued for the construction, additions, modifications, and upgrading of this treatment works or wastewater source. 1966 - EA - 32

7. List previous operation permits issued for this facility after July 1, 1972.

None

8. Date that treatment works or wastewater source started operation, using all facilities currently at plant August, 1966

9. Name of certified operator in charge of this facility None

Operation of this well is supervised by one or more of the following degreed chemical engineers:

(1) R. B. Roaper, B.S. Chemical Engineering, Rice Institute, 1956, M. S. Chemical Engineering, University of Colorado, 1958

(2) R. T. Hamm, B.S. Chemical Engineering, Lehigh University, 1961

Consultation is held frequently with W. M. Sargent, B. S., Petroleum Engineering, Texas A&M, 1952, Chief Petroleum Engineer of Cabot Corporation's Oil and Gas Division, in charge of designing and drilling the well in 1966. Consultation is also held with Robert N. Johnson, B.S., Petroleum Engineering, Texas A&M, 1955, also of the Cabot Oil and Gas Division, Pampa, Texas. Both men are registered professional engineers in Texas.

SECTION II - Effluent Data

1. Approved Loadings (Design)

   a. Gallons Per Day — 216,000 GPD

   b. Pounds of BOD Per Day — _____ Lbs BOD/Day

   c. Pounds Suspended Solids Per Day — None specified Lbs SS/Day

   d. Population Equivalent (at .17 lb BOD/P.E. — _____ P.E.

2. Current Loadings

   * a. Gallons Per Day — 173,000 (instantaneous rate) GPD

   b. Influent BOD Concentration — _____ mg/l

   c. Pounds of BOD Per Day — _____ Lbs BOD/Day

   d. Influent Suspended Solids Concentration — 3,200 mg/l

   * e. Pounds Suspended Solids Per Day — 4,600 (based on instantaneous rate) Lbs. SS/Day

   f. Population Equivalent(at .17 lb BOD/P.E. — _____ P.E.

3. History of Flows

	** Fiscal Year	Flow	
(a)	1969	5.375	MGD
	1970	8.366	MGD
	1971	27.492	MGD
	1972	91.653	MGD

   (b) Graph of Flows (Last 12 Months) (Attached)

4. Excess flows

   a. Number of times which flow was bypassed to excess flow treatment or bypassed raw to the waters of the State for as long as data is available _____ Times

   b. Length of time that above data covers _____ Years _____ Months

* These daily rates are based on the quoted instantaneous rates, which normally do not persist for 24 hours, except during periods of heavy rainfall.

** Cabot's fiscal year begins on October 1 of the preceding calendar year.

SECTION V - Signature by Engineer

I hereby certify to the best of my knowledge that the information contained in this application is true and correct.

Date May 3, 1973 Signature C. B. Beck (Seal)

C. B. Beck

Certificate by Applicant

I hereby certify to the best of my knowledge that the information submitted is true and correct and the facility for which this permit is applied is being operated in compliance with all Standard and Special Conditions listed on the Construction Permit issued for this facility. I further agree that this Application for Permit shall not constitute a Permit until signed by the Manager of the Permit Section, Division of Water Pollution Control.

Date May 7 /73 Signature of Applicant William Tambo

William Tambo

Title Plant Manager

Approval by Illinois Environmental Protection Agency

Permit Number _____

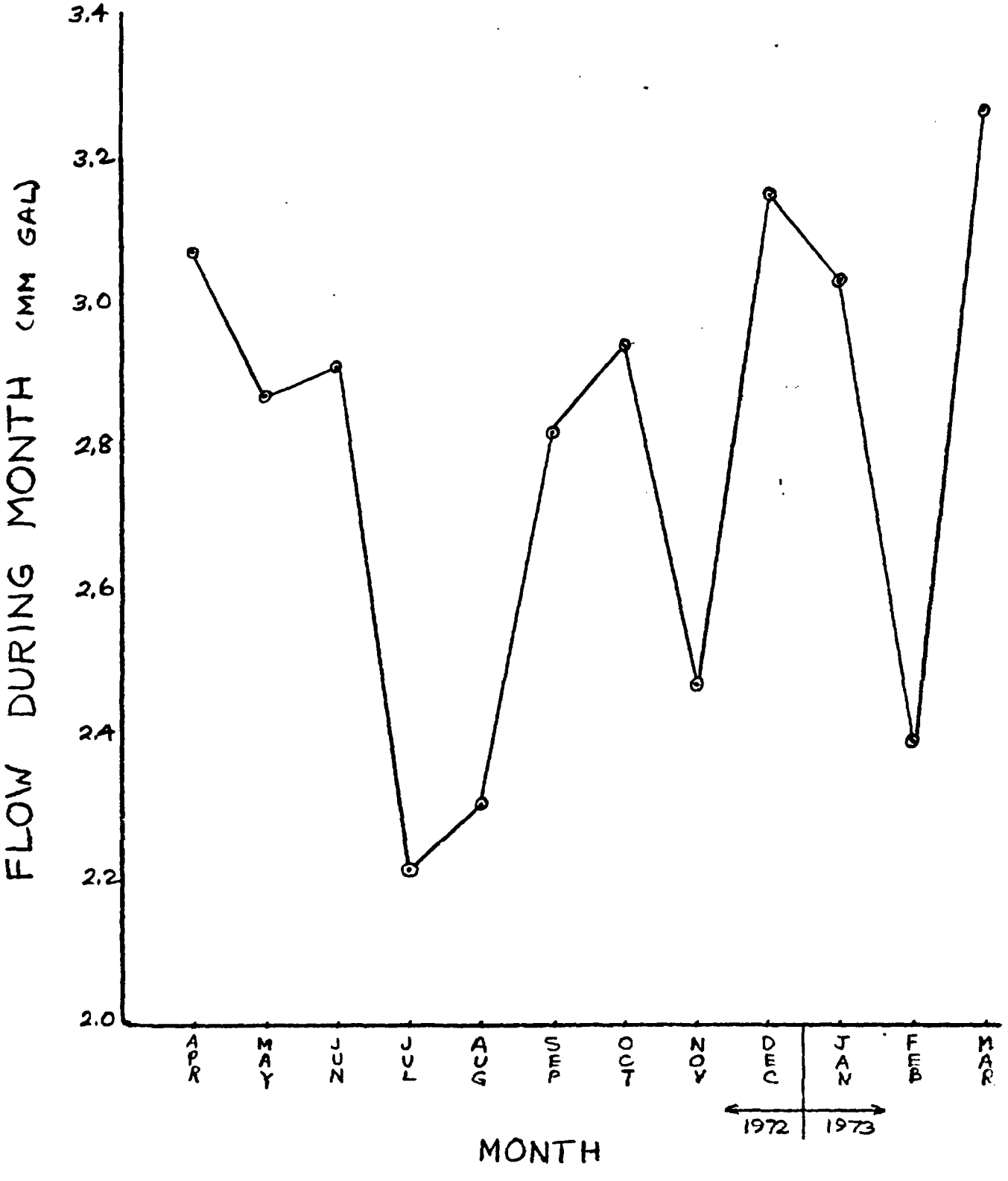
Date _____

This Permit Expires _____

_____

Manager
Permit Section
Division of Water Pollution Control

HISTORY OF FLOWS
DEEP WELL DISPOSAL
CABOT – TUSCOLA



ATTACHMENT TO APPLICATION FOR OPERATING PERMIT

WASTE DISPOSAL WELL

Information contained in this attachment is presented in response to the letter of April 5, 1973 from Mr. Ward L. Akers, in which he requested this information:

1. Previous permits are attached.

   (a) Construction permit #1966-EA-32

   (b) Operating permit #1971-EB-29

2. Total depth of well is 5318 feet.

3. Date injection began - August 13, 1966. This does not include injection tests performed prior to this date.

4. (a) Lowest depth of cemented double casing - 816 ft.

   (b) Lowest depth of cemented single casing - 4898 ft.

5. Injection formation name and depth (top) -

   Cambrian - 4804 ft.

   Franconia - 5264 ft.

6. Injection tubing - Fibercast CL2025

7. Annulus protection system - Oil is maintained in the annulus to provide a static pressure of 107-109 psi at the surface. This oil is a mixture of Provalent 4A and No. 2 Diesel oils in equal volumes resulting in a specific gravity of 0.915. This is sufficient to prevent the acidic wastes from rising in the annulus to such an elevation that would allow attack on the steel part of the casing. Maintaining this static pressure will assure that the acid level will not rise above the top of the epoxy fiberglass portion of the casing (bottom 300 feet).

8. (a) Maximum injection rate - 150 gpm, as specified in existing permit #1971-EB-29.

   (b) Maximum injection pressure - 50 psig.

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Operating conditions indicate flows of 110 - 115 gpm, with the injection pressure at minus 10 - 12 inches of mercury. Using the Hazen-Williams formula, a flow rate of 135 - 140 gpm can be expected with an injection pressure of 50 psig when injecting materials having a low (1.0) specific gravity. When disposing of 31.5% hydrochloric acid (sp. gr. 1.16) @ 1 psig injection pressure, a flow rate of 200 gpm is predicted.

Lower flow rates when disposing of acid, i.e. 150 gpm, cause water hammer in the well, which results from the volatility of the injected acid. We therefore request that a permit be issued for:

(1) An injection rate which will allow positive pressure operation during disposal of high concentration acid, and

(2) A maximum injection pressure of 50 psig when injecting materials having a low specific gravity.

9. Sources of wastes - Cabot Corporation, R. R. Donnelley Company, A. E. Staley Manufacturing Company.

10. Chemical constituents of wastes -

(a) Cabot - Process water containing hydrochloric acid wastes and chloridic salts. Excess hydrochloric acid, 32% strength, when required by lack of sales. Silicon dioxide particulates, up to 1 wt. % of waste water stream.

(b) Donnelley - Etching wastes consisting of nitric acid, zinc nitrate, trisodium phosphate, and aromatic solvent.

(c) Staley - Starch wastes consisting of chlorides, corn starch, and sulfates, as a 4% solution in water.

11. Total amount of fluid injected as of April 9, 1973: 70,700,000 gallons.

12. Well maintenance is normally performed every six months on the average. The tubing is hydrostatically tested at up to two times the maximum design pressure. This is 4 or more times the maximum

Cont....

operating differential. Tubing and/or couplings failing this test are automatically replaced. Also, a cement bond log and casing thickness log are performed on the steel portion of the casing. A summary of maintenance through October, 1972, has been sent to you under our letter of December 11, 1972 (copy attached). A copy of our most recent maintenance record (April, 1973) has been added to this maintenance summary.